

Cypress™

Cypress Tech Talk

July 28, 2020



MITRE

The Office of the National Coordinator for
Health Information Technology



CMS
CENTERS FOR MEDICARE & MEDICAID SERVICES

Agenda

- Software Updates
 - Cypress v6 Release
 - Community Suggested Features and Bug Fixes
- Recent Issue
 - Cypress Known Issues Dashboard
- Cypress Versions
- Open Discussion
- Contact Information

*See the Glossary at the back for definitions of terms

Software Updates

Cypress v6 Release

- **Final Cypress v6 release July 23, 2020**
 - HL7 QRDA Category 1 R5.2
 - 2021 CMS QRDA I Implementation Guide for Hospital Quality Reporting
 - 2021 CMS QRDA III Implementation Guide for Eligible Clinicians and Eligible Professionals
 - Support for 2021 reporting/performance period eCQMs
 - 9 EH/CAH eCQMs
 - 47 EP/EC eCQMs
 - 1 Hybrid eCQM (CMS529)
 - Continued and improved support for CVU+ testing

Software Updates

Community Suggested Features and Bug Fixes

- Calculation and import updates:
 - [CYPRESS-1687](#): Bundle updates to avoid calculation discrepancies in contiguous US time zones
 - [CYPRESS-2058](#): Unit of Measure validation for nullFlavor result
 - [CYPRESS-2015](#): Warnings for improper QRDA-I file elements, especially time interval discrepancies
- User experience improvements:
 - [CYPRESS-1374](#): Include all warnings in report as opposed to just errors
 - [CYPRESS-1985](#): Fixed master patient filter so that it does not timeout
 - [CYPRESS-2040](#): Update test result dropdown to fix inaccurate times
- HTML improvements:
 - [CYPRESS-1958](#): Export all missing attributes in the HTML patient representation
 - [CYPRESS-2034](#): Match patient IDs between QRDA and HTML patient files
- CVU+ and/or vendor patient updates:
 - [CYPRESS-1961](#) and [CYPRESS-2037](#): Sorting quantities fixed to sort by value rather than sorting as a string
 - [CYPRESS-1980](#): Select All option for vendor patient page
 - [CYPRESS-2042](#): Clarify instructions for HL7 CVU+ tests
 - [CYPRESS-2051](#): Fix calculation issue for performance rates with denominator 0
- Features also included in latest v5:
 - ATL Request: Random address used for realistic test patient deduplication
 - Google Group Request: Record Sample tests show 'incomplete' instead of 'failing' status (also included in latest v5)
 - [CYPRESS-1907](#): Improved color contrast (also included in latest v5)

Calculation and Import Updates

- **CYPRESS-1687: Bundle updates to avoid calculation discrepancies in contiguous US time zones**
 - Cypress shifts all patient data to UTC time (UTC-0). This sometimes causes calculation issues with certain patients if the vendor software operates in western US time zones.
 - In the latest bundle, adjustments have been made to patients with data near a day boundary so that the date does not change when shifting time zones. Updated times are midday so that they work with any time zone in the contiguous US.
 - This should prevent problems for users that shift to US times rather than UTC.
- **CYPRESS-2058: Unit of Measure validation for nullFlavor result**
 - Impacted CMS9v8 and CMS105v8.
 - If a result value was created with a nullFlavor, Cypress previously errored on the QRDA input.
 - Cypress now appropriately evaluates patient data with nullFlavor result values.

Calculation and Import Updates (cont.)

- **CYPRESS-2015: Warnings for improper QRDA-I file elements, especially time interval discrepancies**
 - Four new warning types: dual nullFlavor intervals, interval low after high, nullFlavor negated code without valueset, and string type value warnings.

import_warnings.xml - 10 errors and warnings

View Uploaded XML with Errors

Errors (6)

Warnings (4)

Warning message	Go To in XML
Interval with nullFlavor low time and nullFlavor high time. Located in element with QRDA type: PatientCharacteristicPayer and id: 88ed68d0-9bcd-0138-3a2d-784f43709e4a(root), (extension).	jump to error
Interval with low time after high time. Located in element with QRDA type: EncounterPerformed and id: 1.3.6.1.4.1.115(root), 5ebee1b066105e684b013cf1(extension).	jump to error
Negated code element contains nullFlavor code but no valueset. Located in element with QRDA type: AssessmentPerformed and id: 1.3.6.1.4.1.115(root), 5ebee1ac66105e684b013812(extension).	jump to error
Value with string type found. When possible, it's best practice to use a coded value or scalar. Located in element with QRDA type: PhysicalExamPerformed and id: 1.3.6.1.4.1.115(root), 5ebee1b066105e684b013cf5(extension).	jump to error

```
<!-- low and high both null warning -->
<effectiveTime>
  <low nullFlavor="UNK"/>
  <high nullFlavor="UNK"/>
</effectiveTime>
```

```
<!-- low after high warning -->
<effectiveTime>
  <low value="20201006080000"/>
  <high value="20181006083000"/>
</effectiveTime>
```

```
<observation classCode="OBS" moodCode="EVN" negationInd="true">
  <!-- Assessment Performed -->
  <templateId root="2.16.840.1.113883.10.20.24.3.144" extension="2019-12-01"/>
  <id root="1.3.6.1.4.1.115" extension="5ebee1ac66105e684b013812"/>
  <code nullFlavor="NA" codeSystem="2.16.840.1.113883.6.1" codeSystemName="LOINC"/>
```

```
<!-- string value warning -->
<value xsi:type="ST">Good</value>
```

Software Updates

User Experience Improvements

- **CYPRESS-1374**: Include all warnings in report as opposed to just errors

C3 QRDA Category III Passing Measure Tests with Warnings

CMS2v10 Preventive Care and Screening: Screening for Depression and Follow-Up Plan

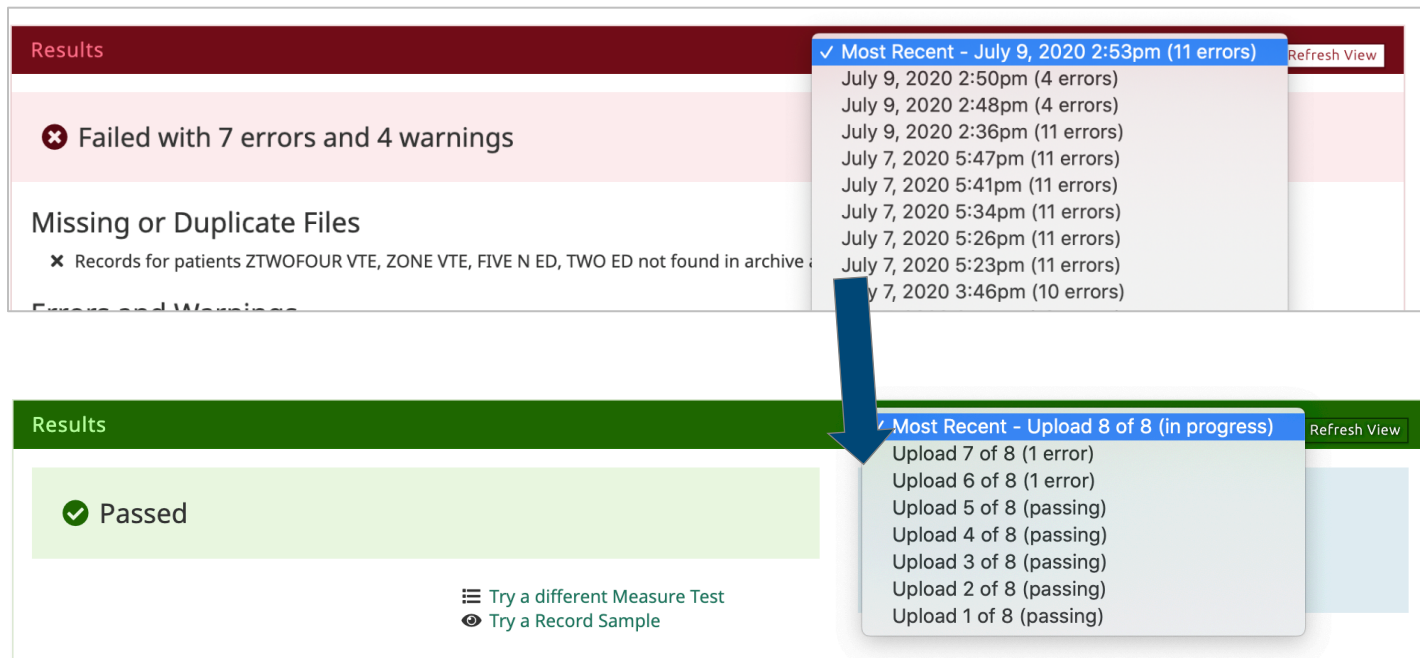
- Warnings
 - SHALL contain exactly one [1..1] templatId (CONF:CMS_1) such that it SHALL contain exactly one [1..1] @root="2.16.840.1.113883.10.20.27.1.2" (CONF:CMS_2).SHALL contain exactly one [1..1] @extension="2019-05-01" (CONF:CMS_3). (CMS2v10_5efe2268c1c388ac15576e69.debug__1_.xml)

- **CYPRESS-1985**: Fixed master patient filter so that it does not timeout

Filter Patients			Annual Update Bundl
Type to search by measure			<input checked="" type="radio"/> Alpha bundle for the 2020 Re
<input type="text" value="cms111"/>			
CMS111v9 - PopulationSet 1 Patients			
Patient Name	DOB	Gender	IPOP
Z24 VTE	February 24, 1954	Male	1
A STROKE	March 7, 1943	Male	1
Z1 VTE	February 8, 1954	Male	1
5 N ED	January 4, 1951	Female	1
2 ED	January 21, 2002	Female	1
Total			5

User Experience Improvements (cont.)

- **CYPRESS-2040: Update test result dropdown to fix inaccurate times**
 - All previous test runs were labelled with times to distinguish between test executions.
 - These times were labelled in UTC when they should be shown in the local time zone, so they appear to be off from the accurate time by the UTC offset.
 - Cypress shows these executions differently to not display the incorrect time.



Software Updates

HTML Improvements

- **CYPRESS-1958: Export all missing attributes in the HTML patient representation**
 - Several attributes representable in QRDA were not shown in the HTML exports for patients.
 - This was updated to support attributes such as participationPeriod, supply, requester, priority, methodCode, daysSupplied, and more.

```
<entryRelationship typeCode="REFR">
  <supply classCode="SPLY" moodCode="EVN">
    <!-- Days Supplied -->
    <templateId root="2.16.840.1.113883.10.20.24.3.157"
      extension="2018-10-01"/>
    <id root="6fc75044-6dc4-4ef6-b1e4-736c951cdf4"/>
    <quantity value="10" unit="d"/>
  </supply>
</entryRelationship>
```

QDM::MedicationOrder
Pharmacologic Therapy for Hypertension
Codes:
NA_VALUESET: 2.16.840.1.113883.3.526.1577
Time Elements:
Relevant Period Start: 2018-03-02T18:00:00.000Z
Author Date/Time: 2018-03-02T18:00:00.000+00:00
Other Fields:
Days Supplied: 10
Negation Reason: 107724000 (SNOMEDCT)

- **CYPRESS-2034: Match patient IDs between QRDA and HTML patient files**
 - Patient IDs in HTML files were previously different from the IDs used in the corresponding patient QRDA file. This has been fixed to match.

CVU+ and Vendor Patient Updates

- **CYPRESS-1961 and CYPRESS-2037** : Sorting quantities fixed to sort by value rather than sorting as a string
 - Sorting results of type Quantity was previously done as a string comparison, rather than comparing the numeric quantities.
 - Example: “100 mmHg” would be considered to be less than (<) “80 mmHg”
 - Updated version compares the values (100 > 80) to determine order.
 - This doesn’t impact certification test patients, but it could impact calculation for CVU+ vendor patients.
- **CYPRESS-1980**: Select All option for vendor patient page

☐ Select All

Select	Patient Name
<input type="checkbox"/>	Janet Kelly
<input type="checkbox"/>	JanetBad Kelly

☒ Unselect All

Select	Patient Name
<input checked="" type="checkbox"/>	Janet Kelly
<input checked="" type="checkbox"/>	JanetBad Kelly

CVU+ and Vendor Patient Updates (cont.)

■ CYPRESS-2042: Clarify instructions for HL7 CVU+ tests

- When HL7 only tests were added to the CVU+ program test section, the test details continued to show CMS program instructions.
- Updated test interface shows the simpler instructions for HL7 only tests.

CMS Implementation Guide Checklist (HL7_Cat_III)

1 ⚡ CMS Implementation Guide Checklist Instructions

- Enter the information below into your EHR and record the entered values in the inputs boxes provided.
 - The "CMS IG Conformance Statement Reference" can be used to find specific guidance in the CMS Implementation Guide.
 - This information may need to be entered into a patient record, a provider profile or as a system configuration.
- Export (at least) one QRDA file that contains the information below and upload to Cypress.
 - Cypress will attempt to find the information below in the uploaded QRDA files.
 - When the information is found, a green checkmark will appear in the "Validated in QRDA" column. The file name where the information is found will also be indicated.
- Click the View Results link for:
 - Additional Program specific validations.
 - eCQM Calculation Results (for QRDA Category I uploads).

HL7 QRDA Category III Validation

1 ⚡ Upload Files

Upload results from the EHR system in the form of a zip file of QRDA Category I documents to get test results. This will automatically run a test execution.

Upload Results	Status
<input type="radio"/> Not Started	<input type="radio"/> Not Started

CVU+ and Vendor Patient Updates (cont.)

- **CYPRESS-2051: Fix calculation issue for performance rates with denominator 0**
 - For performance rates in QRDA-III documents, if the denominator has value 0, then the performance rate should be NA.
 - Previously, Cypress would give conflicting error messages showing that the performance rate should ***not*** be NA. Cypress now accepts the correct value or shows the correct error message as applicable.
 - This does not affect certification because no tests will have denominator with value 0.

View Uploaded XML with Errors

QRDA (13) Reporting (597) Submission (0) CMS Warnings (0) Other Warnings (0)

Error message Go To in XML

Reported Performance Rate for Numerator 433EFB69-22B1-4BC0-8864-838ADB30A072 **should not be NA**

Population 12351F43-07E0-426A-B7C6-C3E06116AA3A for Measure 40280382-6963-bf5e-0169-777a70c70ab7 reported more than once

Population 164F40FC-BF3F-4441-BD40-04CDA5A5D640 for Measure 40280382-6963-bf5e-0169-777a70c70ab7 reported more than once

Population 36750674-EE0B-470D-B674-43B300D04064 for Measure 40280382-6963-bf5e-0169-

View Uploaded XML with Errors

QRDA (13) Reporting (597) Submission (0) CMS Warnings (0) Other Warnings (0)

Error message Go To in XML

Reported Performance Rate for Numerator 433EFB69-22B1-4BC0-8864-838ADB30A072 should be NA

Population 12351F43-07E0-426A-B7C6-C3E06116AA3A for Measure 40280382-6963-bf5e-0169-777a70c70ab7 reported more than once

Population 164F40FC-BF3F-4441-BD40-04CDA5A5D640 for Measure 40280382-6963-bf5e-0169-

Recent Features in Both v6 and v5

- **Random address used for realistic test patient deduplication**
 - Previously, Cypress created all patients with the same address.
 - Cypress creates patients with different addresses, where addresses will not be changed when duplicating patients.

```

▼<recordTarget>
  ▼<patientRole>
    <id extension="5e9bfd19dfe4bd03bdf0fecf" root="1.3.6.1.4.1.115"/>
    ▼<addr use="HP">
      <streetAddressLine>202 Burlington Rd.</streetAddressLine>
      <city>Bedford</city>
      <state>MA</state>
      <postalCode>01730</postalCode>
      <country>US</country>
    </addr>
    <telecom use="WP" value="tel:+1-781-271-3000"/>
  ▼<patient>

```



```

▼<recordTarget>
  ▼<patientRole>
    <id extension="5e9bfd19dfe4bd03bdf0fecf" root="1.3.6.1.4.1.115"/>
    ▼<addr use="HP">
      <streetAddressLine>7478 Riverview Lane</streetAddressLine>
      <city>Massapequa</city>
      <state>NY</state>
      <postalCode>11758</postalCode>
      <country>US</country>
    </addr>
    <telecom use="WP" value="tel:+1-202-555-0165"/>

```

Recent Features in Both v6 and v5 (cont.)

- C1 Record Sample tests “Incomplete” until first QRDA upload
- Before

3 ⚡ View Results			
Upload Results	C1 Upload Results	C3 Upload Results	Status
<input type="radio"/> Not Started	<input type="radio"/> Not Started	<input type="radio"/> Not Started	<input type="radio"/> Not Started
Data Criteria Verification			Status
CMS2v9 Preventive Care and Screening: Screening for Depression and Follow-Up Plan			Failing
CMS22v8 Preventive Care and Screening: Screening for High Blood Pressure and Follow-Up Documented			Not Started
CMS69v8 Preventive Care and Screening: Body Mass Index (BMI) Screening and Follow-Up Plan			Not Started

- After
















3 ⚡ View Results			
Upload Results	C1 Upload Results	C3 Upload Results	Status
<input type="radio"/> Not Started	<input type="radio"/> Not Started	<input type="radio"/> Not Started	<input type="radio"/> Not Started
Data Criteria Verification			Status
CMS2v9 Preventive Care and Screening: Screening for Depression and Follow-Up Plan			Incomplete
CMS22v8 Preventive Care and Screening: Screening for High Blood Pressure and Follow-Up Documented			Not Started
CMS69v8 Preventive Care and Screening: Body Mass Index (BMI) Screening and Follow-Up Plan			Not Started

Software Updates





















Recent Features in Both v6 and v5 (cont.)

■ CYPRESS-1907: Improved color contrast for expected results

■ Before

Patient Name	Template Name	DOB	Gender	IPOP	DENOM	NUMER	DENEX	DENEXCEP
Constance Johnston	Z32 Heart Adult	February 13, 1950	Female					
Rick Gregory	Z12 GP Adult	February 3, 1972	Male					
Laurie Fleming	Z17 GP Adult	March 20, 1969	Female					

■ After

Patient Name	Template Name	DOB	Gender	IPOP	DENOM	NUMER	DENEX	DENEXCEP
Lewis Boyd	Z12 GP Adult	February 3, 1972	Male					
Erik Bates	Z13 N GP Adult	February 13, 1972	Male					
Toni Stevenson	B (Independent Risk Factors 4) Cancer Female	September 1, 1965	Female					
Carl Warren	A N BH Adult	January 1, 1978	Male					

Recent Issue

Cypress Known Issues Dashboard

- <https://oncprojecttracking.healthit.gov/support/secure/Dashboard.jspa?selectPageId=18000>
- The dashboard collects all labeled known issues in one place, sorted by Cypress version
- Easily navigate to the dashboard from the Cypress summary page

Cypress Known Issues			
<p>Cypress Known Issues</p> <p>Below are tables that list known issues for the most recent Cypress Versions</p> <p>Release Notes for Cypress Versions can be found here</p>			
Filter Results: Cypress Known Bugs 5.2.0			
Summary	2020 Performance Period EP/EC eCQMs	2020 Reporting Period EH eCQMs	Solution
CMS 145 Denominator Issue			...
QRDA III giving C3 Execution: An internal error occurred			
QRDA-I Validation Error			
1-3 of 3			

Cypress Versions

Version	Dates	Measures Supported
V5.4.1	June 4, 2020	Latest version supporting eCQMs for the 2020 Reporting/Performance Period and CQL. Contains feature improvements and fixes for bugs found in Cypress v5.2.0. Support for 2015 Certification Edition OR 2015 Certification Cures Updated Edition.
V6 Alpha	May 21, 2020	Initial support for QRDA Category 1 R5.2 and 2021 reporting/performance period eCQMs.
V6.0.0	July 23, 2020	Support for QRDA Category 1 R5.2, Updated CMS IGs, and 2021 reporting/performance period eCQMs.

Bundle Version	Dates	Features
2019.1.1	December 19, 2019	Cypress v5 only CQL-based measures released in 2019 for the 2020 reporting year. Removed retired measures as announced on November 19, 2019.
V6 Alpha	May 21, 2020	Cypress v6 only Initial CQL-based measures released in 2020 for the 2021 reporting year.
2020.0.1	July 23, 2020	Cypress v6 only CQL-based measures released in 2020 for the 2021 reporting year.

*Cypress v4 and the 2018 bundle have been retired due to the end of the 2019 reporting period.

Reporting end dates: April 30, 2020 for EP (source: [QPP](#)). May 1, 2020 for EH (source: [QualityNet](#)).

OPEN DISCUSSION

Next Cypress Tech Talk

- Tuesday, August 11, 2020 at 1pm ET
- To join online, visit: <https://global.gotomeeting.com/join/529898157>
- To join via phone, dial: 1-646-749-3122
- Meeting Number: 529 898 157
- Meeting link, as well as a calendar event file, available at:
 - <https://www.healthit.gov/cypress/techtalks.html>

Notes

- **Completed Webinars will be posted on the Cypress website on the Tech Talks tab**
 - <https://www.healthit.gov/cypress/techtalks.html>
- **Send questions and feedback to the Cypress Talk List at**
 - project-cypress-talk@googlegroups.com
- **Report bugs and issues to the Cypress JIRA at**
 - <https://oncprojecttracking.healthit.gov/support/browse/CYPRESS>

Glossary

- **CQL – Clinical Quality Language**
- **CVU – Cypress Validation Utility**
- **CVU+ – Cypress Validation Utility Plus Calculation Check**
- **EC – Eligible Clinician**
- **eCQM – Electronic Clinical Quality Measure**
- **EH – Eligible Hospital**
- **EP – Eligible Professional**
- **HL7 – Health Level Seven International**
- **IG – Implementation Guide**
- **QPP – Quality Payment Program**
- **QRDA – Quality Reporting Document Architecture**